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SEWAGE AND WATER WORKS CONSTRUCTION

Richard S. Green, et al

Public Health Service
Washington, D. C.

1960

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SEWAGE AND WATER WORKS CONSTRUCTION 1960

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service

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SEWAGE AND WATER WORKS CONSTRUCTION—1960

Prepared Under the Direction of

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U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

Division of Water Supply and Pollution Control
Washington 25, D. C.

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SECTION I—GENERAL PRESENTATION OF SEWAGE AND WATER WORKS CONTRACT AWARDS

A. CONTRACT AWARDS—1960

Contract awards in the sewage and water works field in 1960 reached a record annual level close to $1.4 billion. The total dollar value is broken down as follows:

Sewage treatment	$359.0
Collecting sewers	359.4
Water works	644.9
	1,363.3

Contracts associated with both water works and collecting sewers were awarded at record levels. Contracts covering sewage treatment facilities stood above figures reported in any previous year except 1958. Annual figures show a 28 percent rise over 1959 figures for water works contracts, a 7 percent rise over 1959 figures for collecting sewer contracts, and a 3 percent rise over 1959 figures for sewage treatment contracts.

Each of the above totals is based upon an identified and an apportioned figure. The identified contracts are those for which the descriptive information available clearly states a single type of construction. Those contracts that cover more than a single type are called "combination" contracts. These combination contracts are then apportioned to the sewage treatment works, collecting sewers, and water works categories on the basis of known national experience in each of these.

On a constant dollar basis, the total dollar value of contract awards in the sewage and water works fields in 1960 stood at a record high. Sewage treatment works contracts fell short of the total of each of the four prior years. However, collecting sewer contracts exceeded the 1959 totals, and the total for water works construction rose substantially from the previous record level, counteracting the decline in sewage treatment contracts.

A comparison of constant dollar values with current dollar values illustrates the effect of the rapid increase in construction costs, which seems likely to continue.

B. METHOD OF DATA COLLECTION

The contract award data presented in this publication for the year 1959 result from the careful examination of over 25,000 contract notifications in the sewage and water works construction and related fields. All notifications of similar contracts awarded in the same geographical area are checked to reduce the chance of duplication. Certain contracts, primarily those covering sewage treatment plants, are checked and verified by the various State water pollution control agencies.

The data on which this report is based were obtained from:

1. F. W. Dodge Corporation, daily reports on construction in the sewage and water works fields in the 37 Eastern States.
2. Construction Daily Reports, McGraw-Hill Company, New York.
3. Various construction news periodicals, such as, *Construction News Bulletin, Pacific Architect and Builder, Rocky Mountain Construction,* and *Southwest Builder and Contractor.*

Practically all of the information for the 37 Eastern States is obtained from daily reports of the F. W. Dodge Corporation.

The data presented are composed of contracts awarded by municipalities, special districts, other governmental bodies, and various institutions, resorts, recreation centers, etc. A few contracts are included for industries where the cost of such facilities can be readily identified, and where it is possible to ascertain that the facilities are primarily for the disposal of sanitary wastes or for domestic water works facilities.

TABLE 1.—*Annual Contract Awards—Sewage Treatment Works, Collecting Sewers, and Water Works—1952 to 1960*

[Millions of dollars]

Year	Sewage treatment		Collecting sewers		Water works		Total	
	Actual	1955	Actual	1955	Actual	1955	Actual	1955
1952	137	159	225	261	227	263	589	683
1953	187	206	286	314	283	311	756	831
1954	229	241	244	256	293	308	766	805
1955	201	201	301	301	394	394	896	896
1956	354	338	305	291	441	420	1,100	1,049
1957	351	320	247	225	457	416	1,055	961
1958	389	338	310	269	419	364	1,118	971
1959	349	280	336	278	504	417	1,189	984
1960	359	287	359	288	645	516	1,363	1,091

NOTES:

1. The *Engineering News-Record* Construction Cost Index is used to change actual dollars to 1955 dollars.

2. The Public Health Service sewage treatment data prior to 1956 are composed of identified contracts only. Since 1956 the figures include an amount apportioned to sewage treatment works free from the "combination" contracts.

3. Data on collecting sewers prior to 1957 are obtained by subtracting Public Health Service sewage treatment data from the U.S. Department of Commerce sewer data which includes sanitary and storm sewerage systems as well as sewage treatment works. The data for 1957, 1958 and 1959 on collecting sewers were assembled by the Public Health Service and do *not* include storm sewers.

4. The water works data prior to 1957 are based on records maintained by the U.S. Department of Commerce. The 1957, 1958 and 1959 data are obtained by the Public Health Service.

TABLE 2.—*Monthly Contract Awards—Sewage Treatment Works, Collecting Sewers, and Water Works—1960*

[Millions of dollars]

	Sewage treatment		Collecting sewers		Water works		Total	
	Actual	Cumulative	Actual	Cumulative	Actual	Cumulative	Actual	Cumulative
January	27.2	27.2	20.6	20.6	32.2	32.2	80.0	80.0
February	19.9	47.1	23.6	44.2	41.6	73.8	85.1	165.1
March	36.1	83.5	24.9	69.1	48.2	122.0	109.5	274.6
April	25.6	109.1	28.8	97.9	23.9	155.9	88.3	362.9
May	22.6	131.7	33.8	131.7	51.2	207.1	107.6	470.5
June	34.5	166.2	43.9	175.6	84.2	291.3	162.6	633.1
July	33.2	199.4	38.5	214.1	62.3	353.6	134.0	767.1
August	23.6	223.0	29.7	243.8	48.4	402.0	101.7	868.8
September	31.9	254.9	25.1	268.9	58.5	460.5	115.5	984.3
October	29.0	283.9	26.7	295.6	33.3	493.8	88.9	1,073.2
November	30.4	314.3	33.8	329.4	59.8	553.6	124	1,197.2
December	44.7	359.0	30.6	359.4	91.0	644.6	165.7	1,362.9

TABLE 3.—*1960 Contract Awards By States*

State	Total	Sewage treatment	Sewers	Water	Combinations
Alabama	$ 25,315,735	$ 3,309,144	$ 4,959,915	$ 16,147,606	$ 899,070
Alaska	4,641,807	96,720	2,439,713	2,105,374	.....
Arizona	12,123,298	3,217,345	4,373,947	4,532,006	.....
Arkansas	7,583,061	3,218,307	692,158	3,049,767	622,829
California	175,847,159	23,791,704	38,323,819	107,368,085	6,363,551
Colorado	25,214,616	2,230,967	1,245,360	21,579,289	159,000
Connecticut	19,762,579	3,858,898	9,846,382	4,071,506	1,985,793
Delaware	2,685,615	911,402	341,685	1,408,002	23,926
District of Columbia	15,258,330	1,526,236	4,542,610	9,189,484	.....
Florida	35,851,207	7,276,116	10,621,722	12,600,098	5,353,271
Georgia	13,160,689	6,912,095	1,881,873	3,954,627	412,094
Hawaii	10,750,344	1,956,580	2,553,362	5,982,232	258,161
Idaho	2,642,294	1,028,819	682,942	867,385	63,148
Illinois	68,450,745	14,760,251	19,839,849	26,636,154	7,214,491
Indiana	21,120,653	4,643,888	2,015,545	14,351,812	109,408
Iowa	12,949,778	4,371,239	2,996,005	5,513,076	69,458
Kansas	16,446,119	5,601,404	5,260,782	4,941,749	642,184
Kentucky	16,311,624	3,323,333	8,929,805	4,011,496	46,990
Louisiana	27,863,811	6,293,473	10,466,139	7,502,644	3,511,555
Maine	2,395,712	768,649	476,604	1,069,551	80,908
Maryland	33,921,609	5,940,532	3,151,247	17,729,577	7,100,253
Massachusetts	17,102,552	7,503,751	3,585,851	5,255,724	757,226
Michigan	60,205,188	9,215,236	9,252,306	37,606,750	4,130,606
Minnesota	34,500,913	5,060,387	11,379,614	9,564,071	8,496,841
Mississippi	16,236,481	2,769,257	2,116,264	10,352,659	998,301
Missouri	19,999,430	3,302,913	9,188,616	6,949,310	558,591
Montana	3,887,236	1,720,270	521,955	1,566,035	78,976
Nebraska	11,244,041	4,595,218	4,351,780	1,278,146	718,898
Nevada	1,873,964	1,228,628	9,934	635,402	.....
New Hampshire	1,472,715	923,930	56,846	416,312	75,627
New Jersey	29,256,588	6,007,121	9,274,085	9,570,280	4,405,102
New Mexico	7,032,530	4,508,988	.....	2,397,262	126,280
New York	118,484,343	46,347,864	31,950,655	39,236,050	949,774
North Carolina	20,392,488	8,534,874	2,308,665	7,717,640	1,831,309
North Dakota	9,612,220	3,777,583	799,102	3,921,648	1,113,887
Ohio	68,271,190	22,378,770	19,492,036	20,787,711	5,612,673
Oklahoma	58,373,967	3,367,539	1,708,545	52,864,741	343,142
Oregon	13,040,041	3,687,839	3,770,300	4,528,324	1,053,488
Pennsylvania	87,623,647	35,832,612	26,821,818	16,980,831	7,988,386
Rhode Island	6,205,180	675,055	795,709	4,734,416	.....
South Carolina	9,312,121	4,256,192	740,428	4,095,573	219,928
South Dakota	3,987,303	885,220	82,148	2,800,627	129,308
Tennessee	18,436,009	6,166,566	5,781,982	5,494,315	993,146
Texas	87,787,312	12,891,160	20,760,460	47,415,679	6,720,013
Utah	7,695,067	3,685,421	507,684	3,136,221	365,741
Vermont	1,410,899	1,351,749	35,000	24,150	.....
Virginia	16,398,199	4,233,308	3,796,485	6,280,926	2,087,480
Washington	27,942,406	4,578,257	11,929,520	11,281,313	153,316
West Virginia	10,701,419	2,179,679	571,141	7,520,706	429,893
Wisconsin	43,652,343	12,783,676	12,138,988	16,440,541	2,289,135
Wyoming	655,131	400,537	101,495	24,440	128,659
Total	$1,363,089,708	$330,186,711	$329,561,265	$615,669,926	$87,671,806

TABLE 4.—*1960 Contract Awards (Distributed) By States*

State	Total	Sewage treatment	Collecting sewers	Water works
Alabama	$25,315,735	$3,605,389	$5,265,639	$16,444,707
Alaska	4,641,807	98,720	2,439,713	2,105,374
Arizona	12,123,298	3,217,345	4,373,947	4,532,006
Arkansas	7,883,061	3,423,530	903,948	3,255,583
California	175,847,139	25,888,501	40,487,713	109,470,945
Colorado	25,214,616	2,283,338	1,299,427	21,631,851
Connecticut	19,762,579	4,513,219	10,521,641	4,727,719
Delaware	2,685,615	919,286	349,821	1,416,508
District of Columbia	15,258,330	1,526,236	4,542,610	9,189,484
Florida	35,851,207	9,040,025	12,442,075	14,369,107
Georgia	15,160,689	7,047,880	2,022,004	4,090,905
Hawaii	10,750,344	2,041,854	2,841,148	6,067,542
Idaho	2,842,294	1,049,626	704,415	888,253
Illinois	68,450,745	17,137,434	22,293,101	29,020,210
Indiana	21,120,653	4,679,938	2,052,749	14,387,966
Iowa	12,949,778	4,394,125	3,019,624	5,536,029
Kansas	16,446,119	5,813,004	5,479,153	5,153,962
Kentucky	18,311,624	3,338,816	8,945,784	4,027,024
Louisiana	27,863,811	7,450,534	11,660,226	8,753,051
Maine	2,395,712	795,398	504,116	1,096,288
Maryland	33,921,009	8,289,073	5,566,653	20,075,883
Massachusetts	17,102,552	7,753,258	3,843,342	5,505,952
Michigan	80,205,188	10,576,273	10,657,185	38,971,725
Minnesota	34,500,913	7,860,106	14,268,922	12,371,885
Mississippi	16,236,481	3,068,198	2,455,731	10,682,552
Missouri	19,999,430	3,486,960	9,378,562	7,133,899
Montana	3,887,236	1,748,293	548,810	1,592,133
Nebraska	11,244,041	5,132,092	4,596,244	1,515,705
Nevada	1,873,964	1,228,628	9,934	635,402
New Hampshire	1,472,718	948,849	82,562	441,303
New Jersey	29,256,588	7,458,607	10,772,018	11,025,963
New Mexico	7,032,330	4,550,397	42,941	2,438,992
New York	118,481,343	46,660,816	32,273,620	39,549,907
North Carolina	20,392,488	9,138,292	2,931,393	8,322,803
North Dakota	9,812,229	4,144,610	1,177,874	4,289,736
Ohio	66,271,190	24,228,152	21,400,597	22,642,441
Oklahoma	58,373,967	3,480,605	1,915,229	52,978,133
Oregon	13,040,041	4,034,965	4,128,623	4,876,453
Pennsylvania	87,623,647	38,464,794	29,538,229	19,620,624
Rhode Island	6,205,180	675,055	795,709	4,734,416
South Carolina	9,312,121	4,328,659	815,213	4,168,249
South Dakota	3,987,303	927,827	126,119	2,933,357
Tennessee	18,438,009	6,493,809	6,119,496	5,822,504
Texas	87,787,312	15,105,412	23,045,567	49,636,333
Utah	7,695,067	3,905,933	632,052	3,257,082
Vermont	1,410,899	1,351,749	35,000	24,150
Virginia	16,398,199	4,921,135	4,506,322	6,970,742
Washington	27,942,406	4,628,775	11,981,654	11,331,977
West Virginia	10,701,419	2,521,329	717,324	7,462,766
Wisconsin	43,652,343	13,537,949	12,917,396	17,196,998
Wyoming	655,131	442,930	143,245	68,956
Total	$1,363,099,708	359,074,869	350,373,624	644,641,415

SECTION II—CONTRACT AWARDS—BASIC DATA—1960

This section presents the basic data as compiled; combination projects have *not* been apportioned. Tables of contract awards by population size groups, contract size groups, drainage basins and States are included.

The population size group tables do not refer to the population served. They represent the size of the community in which each contract was awarded. The population size groups of some contracts were unknown: these contracts consist primarily of schools, hospitals, military bases, and parks. The cumulative percentages shown in these tables are based on the known population groups.

A. SEWAGE TREATMENT WORKS CONSTRUCTION

The sewage treatment works are presented in two categories, namely, NEW PLANT and OTHER. The "NEW PLANT" classification includes stabilization ponds and appurtenances. The "OTHER" category includes replacements and additions to existing treatment plants, interceptors, and outfalls. This category also includes contracts whose costs cannot be separated between "New Plant" and "Other." Therefore, the "Other" classification may include a few new plants.

In 1960 the level of contracts awarded for construction of sewage treatment works in the United States reached a level of $359.0 million. Of this amount $330.2 million covered contracts identified as to specific location and type of construction. The following tables, 5 through 8, inclusive, relate only to contracts individually identified for sewage treatment facilities.

Lists of the locations of contract awards for sewage treatment works are available upon request. Write to Chief, Basic Data Branch, Division of Water Supply and Pollution Control, Public Health Service, Washington 25, D.C.

TABLE 5.—*Contract Awards—Sewage Treatment Works Construction—1960—By Population Size Groups*

Population size group	Total				New plant				Other [1]			
	Number	Dollars	Cumulative [2]		Number	Dollars	Cumulative [2]		Number	Dollars	Cumulative [2]	
			Number	Dollars			Number	Dollars			Number	Dollars
			Percent	*Percent*			*Percent*	*Percent*			*Percent*	*Percent*
Unknown population size	110	5,550,665	.....	.....	70	2,820,263	.....	.....	40	2,730,406	.....	.....
Under 500	132	7,802,669	9.2	2.4	83	5,779,939	15.9	6.2	49	2,022,730	5.4	0.9
500–1,000	144	10,800,742	19.3	5.7	76	5,500,911	30.5	12.0	68	5,299,831	12.9	3.2
1,000–2,500	288	33,266,145	39.4	16.0	146	19,120,013	58.4	32.4	142	14,146,132	28.5	9.3
2,500–5,000	197	49,426,789	53.2	31.2	70	17,558,198	71.8	51.2	127	31,868,591	42.5	23.1
5,000–10,000	155	39,336,583	64.1	43.3	46	15,072,817	80.7	67.2	109	24,263,736	54.5	33.6
10,000–25,000	137	39,836,024	73.6	55.6	38	13,502,770	87.9	81.7	99	26,333,254	65.4	45.0
25,000–50,000	87	28,043,508	79.7	64.2	18	5,837,658	91.4	87.9	69	22,205,850	73.0	54.6
50,000–100,000	56	22,338,867	83.6	71.1	7	2,355,281	92.7	90.4	49	19,983,586	78.4	63.3
100,000–250,000	76	23,895,811	89.0	78.5	15	4,781,863	95.6	95.5	61	19,113,948	85.1	71.6
250,000–over	158	69,888,904	100.0	100.0	23	4,224,435	100.0	100.0	135	65,661,469	100.0	100.0
Total	1,540	330,186,711	.....	.....	592	86,554,178	.....	.....	948	233,632,533	.....	.....

[1] Intercepters; outfalls; additions, enlargements, and alterations to plants, etc.
[2] This is based on the *known* population groups.

TABLE 6.—*Contract Awards—Sewage Treatment Works Construction—1960—By Contract Size Groups*

Contract size group (Dollars)	Total				New plant				Other [1]			
	Number	Dollars	Cumulative		Number	Dollars	Cumulative		Number	Dollars	Cumulative	
			Number	Dollars			Number	Dollars			Number	Dollars
			Percent	*Percent*			*Percent*	*Percent*			*Percent*	*Percent*
Under 10,000	110	606,014	7 1	0 2	30	177,766	5 1	0 2	80	428,248	8 4	0 2
10,000–25,000	245	4,261,807	23 1	1 5	122	2,135,179	25 7	2 4	123	2,126,628	21 4	1 1
25,000–50,000	233	8,394,547	38 2	4 0	92	3,372,694	41 2	5 9	141	5,021,853	36 3	3 2
50,000–100,000	264	19,150,205	55 3	9 8	97	7,134,328	57 6	13 3	167	12,015,877	53 9	9 4
100,000–250,000	338	53,473,170	77 3	26 0	130	20,164,277	79 6	34 2	208	33,308,893	75 8	22 6
250,000–500,000	206	72,220,082	90 6	47 9	81	27,962,593	93 2	63 1	125	44,257,489	89 0	41 6
500,000–1,000,000	80	62,089,456	96 4	66 7	26	18,460,088	97 6	82 3	63	43,620,368	95 7	60 3
1,000,000–5,000,000	52	84,367,555	99 8	92 2	14	17,138,253	100 0	100 0	38	67,229,302	99 7	89 0
5,000,000–over	3	25,623,875	100 0	100 0					3	25,623,875	100 0	100 0
Total	1,540	330,186,711			592	96,554,178			948	233,632,533		

[1] Intercepters, outfalls, additions, enlargements, and alterations to plants, etc.

TABLE 7.—*Contract Awards—Sewage Treatment Works Construction—1960—By Drainage Basins*

Drainage basins	Total		New plant		Other [1]	
	Number	Dollars	Number	Dollars	Number	Dollars
Northeast	91	22,513,806	33	6,290,406	58	16,223,400
North Atlantic	232	69,066,026	73	12,490,158	159	57,175,868
Southeast	173	31,845,867	74	13,581,907	99	18,263,960
Tennessee River	21	6,032,244	11	3,260,705	10	2,771,539
Ohio River	149	47,190,973	66	17,568,790	83	29,622,183
Lake Erie	32	8,902,306	9	2,533,778	23	6,368,528
Upper Mississippi	109	27,640,931	65	8,864,951	84	18,775,980
Western Great Lakes	60	21,410,317	22	2,829,723	38	18,580,594
Missouri River	155	16,663,388	73	5,377,619	82	11,285,769
Southwest — Lower Mississippi	100	17,915,770	74	8,151,210	86	9,764,560
Colorado River	19	4,041,280	4	317,680	15	3,723,601
Western Gulf	78	16,468,377	23	4,877,770	55	11,590,565
Pacific Northwest	74	9,361,234	21	1,470,123	53	7,891,110
California	120	22,776,356	33	5,365,620	87	17,410,736
Great Basin	20	5,704,472	9	3,228,641	11	2,475,831
Alaska	2	96,720	1	86,850	1	9,870
Hawaii	5	1,956,589	1	258,148	4	1,698,441
Total	1,540	330,186,711	592	96,554,178	948	233,632,533

[1] Intercepters, outfalls, additions, enlargements, and alterations to plants, etc.

TABLE 8.—*Contract Awards—Sewage Treatment Works Construction—1960—By States*

State	Total	New plant	Other [1]
Alabama	$ 3,309,144	$ 1,768,043	$ 1,541,101
Alaska	96,720	86,850	9,870
Arizona	3,217,345	234,358	2,982,987
Arkansas	3,218,407	681,875	2,536,532
California	23,791,704	5,907,201	17,884,503
Colorado	2,230,967	1,257,268	973,699
Connecticut	3,858,898	1,623,553	2,235,345
Delaware	911,402	254,831	656,571
District of Columbia	1,526,236		1,526,236
Florida	7,276,116	3,907,724	3,368,392
Georgia	6,912,095	2,623,905	4,288,190
Hawaii	1,956,589	258,148	1,698,441
Idaho	1,028,819	469,253	559,566
Illinois	14,740,251	3,607,755	11,132,496
Indiana	4,643,888	1,715,119	2,928,769
Iowa	4,371,239	989,106	3,382,133
Kansas	5,601,404	2,455,908	3,145,496
Kentucky	3,323,333	692,423	2,630,910
Louisiana	6,201,473	3,798,051	2,495,422
Maine	768,649	339,009	429,640
Maryland	5,940,532	1,163,987	4,776,545
Massachusetts	7,303,751	723,790	6,779,961
Michigan	9,215,236	1,421,105	7,794,131
Minnesota	5,060,387	2,050,159	3,010,228
Mississippi	2,769,237	771,029	1,998,228
Missouri	3,302,913	1,333,335	1,969,578
Montana	1,730,270	828,814	901,456
Nebraska	4,865,218	1,238,689	3,626,529
Nevada	1,228,628	328,220	900,408
New Hampshire	923,930	632,400	291,530
New Jersey	6,007,121	2,427,765	3,579,356
New Mexico	1,508,988	341,401	1,167,587
New York	46,347,804	6,099,197	40,248,371
North Carolina	8,534,874	3,626,056	4,908,818
North Dakota	3,777,583	1,671,544	2,106,039
Ohio	22,378,770	4,989,014	17,389,756
Oklahoma	3,367,539	835,650	2,531,889
Oregon	3,687,839	709,773	2,978,066
Pennsylvania	45,832,612	14,533,957	31,298,655
Rhode Island	675,055	34,500	640,555
South Carolina	4,256,192	1,199,598	3,056,594
South Dakota	895,220	162,271	732,949
Tennessee	6,166,566	3,675,307	2,491,259
Texas	12,891,160	4,805,693	8,085,467
Utah	3,685,421	2,224,939	1,460,482
Vermont	1,351,749	378,729	973,020
Virginia	4,233,308	1,940,106	2,371,202
Washington	4,578,257	280,870	4,297,387
West Virginia	2,179,679	1,091,583	1,088,096
Wisconsin	12,783,676	2,149,138	10,634,538
Wyoming	400,537	192,914	207,623
Total	$330,186,711	$ 96,554,178	$233,632,533

[1] Interceptors, outfalls, additions, enlargements, and alterations in plants.

B. COLLECTING SEWER CONSTRUCTION

Collecting sewer construction for 1960 totaled $359.4 million. Tables 9, 10, and 11 analyze the contract award data which was specified as purely collecting sewers (i.e., $329.6 million), and do not reflect any portion of the combination projects. The tabulation of the collecting sewer contract awards by States appears in table 3 of section I.

The collecting sewer classification does *not* include storm sewers.

TABLE 9.—*Contract Awards—Collecting Sewer Construction—1960—By Population Size Groups*

Population size group	Collecting Sewers			
	Number	Dollars	Cumulative [1]	
			Number	Dollars
			Percent	*Percent*
Unknown population size	106	3,625,086	.....	.....
Under 500	96	8,031,380	3.3	2.5
500–1,000	120	13,439,478	7.5	6.6
1,000–2,500	258	29,821,791	15.7	15.7
2,500–5,000	210	25,269,275	22.9	23.5
5,000–10,000	297	56,105,869	33.2	34.6
10,000–25,000	420	39,160,174	47.7	46.6
25,000–50,000	280	50,626,952	57.7	56.0
50,000–100,000	263	24,301,495	66.8	63.4
100,000–250,000	285	35,531,254	76.6	74.3
250,000 and over	677	83,644,555	100.0	100.0
Total	3,002	329,561,265	.....	.....

[1] This is based on the *known* population groups.

TABLE 10.—*Contract Awards—Collecting Sewer Construction—1960—By Contract Size Group*

Contact size (Dollars)	Collecting Sewers			
	Number	Dollars	Cumulative	
			Number	Dollars
			Percent	*Percent*
Under 10,000	.....	.....	.....	.....
10,000–25,000	556	2,934,126	18.5	0.9
25,000–50,000	666	11,042,800	40.7	4.2
50,000–100,000	513	18,407,675	57.8	9.8
100,000–250,000	497	36,655,779	74.4	20.9
250,000–500,000	471	70,916,113	90.0	42.5
500,000–1,000,000	176	61,789,234	95.9	61.2
1,000,000–5,000,000	83	57,725,943	98.7	78.7
5,000,000 and over	40	70,089,595	100.0	100.0
Total	3,002	329,561,265	.....	.....

TABLE 11.—*Contract Awards—Collecting Sewer Construction—1960—By Drainage Basins*

Drainage basins	Collecting sewers		Drainage basins	Collecting sewers	
	Number	Dollars		Number	Dollars
Northeast	235	27,170,173	Colorado River	39	5,387,792
North Atlantic	415	58,513,654	Western Gulf	212	20,117,668
Southeast	160	23,356,546	Pacific Northwest	118	16,548,186
Tennessee River	16	2,978,214	California	467	36,885,261
Ohio River	260	30,282,569	Great Basin	32	3,048,898
Lake Erie	76	10,626,951	Alaska	11	2,439,713
Upper Mississippi	296	38,157,422	Hawaii	8	2,553,362
Western Great Lakes	246	21,534,674			
Missouri River	211	12,216,775			
Southwest-Lower Mississippi	200	18,743,407	Total	3,002	329,561,265

C. WATER WORKS CONSTRUCTION

The water works data are broken down into four categories, namely, SOURCE, TREATMENT, DISTRIBUTION, and MISCELLANEOUS. The "SOURCE" group includes contracts awarded for wells, surface source development, and transmission lines. The "TREATMENT" area includes contracts for plants and auxiliary facilities. The "DISTRIBUTION" category includes contracts for ground storage, elevated tanks, and distribution systems. The "MISCELLANEOUS" classification includes contracts for pumping facilities and for water systems in general. When it is not possible to code a contract that is known to pertain to water into source, treatment, or distribution then it is included in the totals for miscellaneous.

Contract awards for water works construction in 1960, including an apportioned amount from the combination contracts, totaled $644.6 million. The tables below refer only to contracts that pertain exclusively to water works (i.e., $615.7 million).

A single contract amounting to $10,814,430 for the high Dillon Dam has been included with 1960 contracts. This contract was actually awarded in 1959 but with an attached stipulation that the Denver Board of Water Commissioners would have until May 1960 to determine the feasibility of constructing the dam at this time.

TABLE 12.—*Contract Awards—Water Works Construction—1960—By Population Size Groups*

Population size group	Total (Cumulative) [2]		Source (Cumulative) [2]		Treatment (Cumulative) [2]		Distribution (Cumulative) [2]		Miscellaneous [1] (Cumulative) [2]	
	Number	Dollars	Number	Dollars	Number	Dollars	Number	Dollars	Number	Dollars
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Unknown population size										
Under 500	7.4	2.2	6.7	.5	5.4	.3	6.7	3.9	11.3	3.5
500–1,000	15.5	5.8	15.7	4.1	11.6	1.3	13.8	8.2	23.4	7.8
1,000–2,500	29.1	11.3	28.3	8.1	29.5	5.8	26.6	15.8	39.6	13.1
2,500–5,000	39.6	16.4	37.1	10.7	40.2	9.2	37.4	23.8	50.7	18.3
5,000–10,000	50.2	24.0	46.6	15.1	56.7	21.1	48.5	35.0	58.8	22.3
10,000–25,000	64.3	37.8	60.2	23.6	72.3	50.1	62.8	47.9	72.4	32.9
25,000–50,000	70.7	44.5	68.8	30.0	79.5	58.2	68.5	56.3	78.1	36.7
50,000–100,000	75.5	51.9	74.6	40.0	83.5	61.2	73.0	64.7	83.3	42.7
100,000–250,000	83.5	61.4	83.1	50.0	89.3	68.8	81.8	78.0	88.0	48.2
250,000 and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 12.—*Contract Awards—Water Works Construction—1960—By Population Size Groups*—Continued

Population size group	Total		Source		Treatment		Distribution		Miscellaneous [1]	
	Number	Dollars	Number	Dollars	Number	Dollars	Number	Dollars	Number	Dollars
Unknown population size	256	15,520,754	75	2,417,292	13	1,285,822	98	5,986,640	70	5,831,000
Under 500	281	13,455,144	49	931,576	12	292,189	153	7,338,391	67	4,892,988
500–1,000	312	21,441,273	65	6,105,238	14	1,023,838	161	8,195,275	72	6,116,922
1,000–2,500	518	32,914,330	92	6,827,183	40	4,480,838	290	14,189,149	96	7,417,160
2,500–5,000	398	30,317,329	64	4,535,002	24	3,326,223	244	15,079,967	66	7,376,137
5,000–10,000	405	46,029,604	69	7,422,666	37	11,918,261	251	21,115,177	48	5,573,500
10,000–25,000	540	82,693,158	99	14,390,594	35	28,871,215	325	24,281,229	81	14,950,120
25,000–50,000	243	40,215,831	63	10,933,469	16	8,046,807	130	15,898,463	34	5,337,092
50,000–100,000	183	44,496,456	42	17,215,313	9	3,018,879	101	15,760,238	31	8,502,026
100,000–250,000	303	57,189,799	62	16,972,203	13	7,516,626	200	24,958,744	28	7,742,226
250,000 and over	631	231,396,248	123	85,889,659	24	31,079,371	413	41,528,776	71	72,898,442
Total	4,070	615,669,926	803	173,840,195	237	100,860,069	2,366	194,332,049	661	146,637,613

[1] This includes separate contracts for pumping facilities and other water works contracts that cover more than one of the above divisions.
[2] This is based on the *known* population groups.

TABLE 13.—*Contract Awards—Water Works Construction—1960—By Contract Size Group*

Contract size group (Dollars)	Total (Cumulative)		Source (Cumulative)		Treatment (Cumulative)		Distribution (Cumulative)		Miscellaneous[1] (Cumulative)	
	Number	Dollars	Number	Dollars	Number	Dollars	Number	Dollars	Number	Dollars
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Under 10,000	16.8	0.6	24.0	0.5	5.1	0.1	16.7	1.0	13.0	0.3
10,000–25,000	39.3	3.0	44.2	2.1	19.4	0.6	41.1	6.0	34.2	1.9
25,000–50,000	55.5	6.9	58.0	4.4	30.8	1.7	59.2	14.0	47.7	4.1
50,000–100,000	77.2	17.0	71.6	9.0	47.7	4.7	83.5	34.5	72.0	12.0
100,000–250,000	90.1	30.3	84.3	18.3	72.6	13.3	94.8	55.8	87.0	22.4
250,000–500,000	95.2	42.1	92.3	31.0	82.7	22.0	98.0	69.5	93.2	32.9
500,000–1,000,000	98.1	55.1	97.0	46.1	90.3	34.2	99.5	81.2	97.1	45.4
1,000,000–5,000,000	99.7	73.7	99.3	64.8	98.3	68.6	99.9	89.8	99.8	66.2
5,000,000 and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Contract size group (Dollars)	Total		Source		Treatment		Distribution		Miscellaneous [1]	
	Number	Dollars	Number	Dollars	Number	Dollars	Number	Dollars	Number	Dollars
Under 10,000	685	3,477,303	193	916,035	12	63,528	394	2,024,936	86	472,804
10,000–25,000	915	15,062,665	162	2,677,013	34	563,555	578	9,552,562	141	2,269,535
25,000–50,000	657	23,847,962	111	4,015,899	27	1,063,541	429	15,544,320	90	3,224,202
50,000–100,000	885	62,520,288	109	8,086,549	40	3,030,222	575	39,843,308	161	11,560,209
100,000–250,000	527	81,743,567	102	16,112,864	59	8,694,437	266	41,544,948	100	15,391,318
250,000–500,000	206	72,654,605	64	22,120,449	24	8,756,895	77	26,474,083	41	15,303,178
500,000–1,000,000	116	79,776,720	38	26,282,348	18	12,365,856	34	22,800,168	26	18,308,348
1,000,000–5,000,000	65	114,397,048	18	32,488,810	19	34,626,803	10	16,672,255	18	30,609,180
5,000,000 and over	14	162,209,768	6	61,140,228	4	31,695,232	3	19,875,460	1	49,498,839
Total	4,070	615,669,926	803	173,840,195	237	100,860,069	2,366	194,332,049	664	146,637,613

[1] This includes separate contracts for pumping facilities and other water works contracts that cover more than one of the above divisions.

TABLE 14.—*Contract Awards—Water Works Construction—1960—By Drainage Basin*

Drainage Basin	Total		Source		Treatment		Distribution		Miscellaneous	
	Number	Dollars	Number	Dollars	Number	Dollars	Number	Dollars	Number	Dollars
Northeast	308	32,903,702	47	5,874,332	19	7,013,535	191	15,122,737	51	4,893,098
North Atlantic	551	75,972,066	114	37,721,281	20	10,670,762	343	19,515,041	74	8,064,982
Southeast	323	48,066,081	62	8,660,022	35	12,113,216	164	19,047,637	62	8,245,206
Tennessee River	46	7,693,409	1	147,183	6	921,004	23	1,277,035	16	5,348,187
Ohio River	364	46,132,086	62	10,322,955	40	8,229,149	211	17,059,047	51	10,520,935
Lake Erie	105	8,007,208	23	2,487,562	7	1,038,136	62	3,529,337	13	952,173
Upper Mississippi	407	40,730,703	85	4,821,787	31	12,242,226	221	16,934,911	70	6,731,779
Western Great Lakes	243	58,414,442	68	10,311,033	10	26,778,980	132	16,294,474	33	5,059,945
Missouri River	251	37,227,006	54	14,960,936	20	6,559,567	130	9,345,835	47	6,360,668
Southwest-Lower Mississippi	332	75,374,258	78	5,936,482	22	1,831,535	190	12,936,274	42	54,649,967
Colorado River	43	6,341,141	9	1,206,410	1	474,444	18	3,065,478	15	1,594,809
Western Gulf	435	43,299,761	62	12,795,300	13	2,023,874	289	19,472,880	71	9,307,707
Pacific Northwest	183	16,787,743	27	4,509,893	2	504,837	127	10,369,253	27	1,403,760
California	407	106,678,288	90	51,297,775	9	8,844,715	234	24,737,589	74	21,778,209
Great Basin	39	3,924,426	11	1,472,406	.....	.....	16	1,415,029	12	1,036,991
Alaska	12	2,195,374	4	150,976	2	1,614,079	3	176,675	3	163,644
Hawaii	21	5,982,232	6	1,143,862	.....	.....	12	4,312,817	3	525,553
Total	4,070	615,669,926	803	173,840,195	237	100,860,069	2,366	194,332,049	664	146,637,613

TABLE 15.—*Contract Awards—Water Works Construction—1960—By States*

State	Total	Source	Treatment	Distribution	Miscellaneous [1]
Alabama	$ 16,147,606	$ 476,092	$ 6,223,987	$ 4,103,464	$ 5,344,063
Alaska	2,105,374	150,976	1,614,079	176,675	163,644
Arizona	4,332,006	947,304	.....	2,635,011	749,691
Arkansas	3,049,767	426,570	38,500	2,199,326	385,371
California	107,368,085	51,362,534	8,844,715	25,077,492	22,083,344
Coloradо	21,579,289	14,182,314	1,878,673	2,691,665	2,826,637
Connecticut	4,071,506	971,806	1,715,000	1,090,975	293,725
Delaware	1,408,602	818,160	485,886	74,917	29,639
District of Columbia	9,189,484	1,918,869	5,798,307	1,432,749	39,469
Florida	12,600,098	3,059,219	3,525,515	3,456,440	2,567,924
Georgia	3,954,627	1,123,346	152,106	1,562,104	1,117,071
Hawaii	5,982,232	1,143,862	.....	4,312,817	525,553
Idaho	867,385	62,595	.....	439,552	365,238
Illinois	26,636,154	3,567,606	9,080,942	7,231,024	6,756,492
Indiana	14,351,812	5,679,237	1,516,445	1,869,315	5,286,815
Iowa	5,513,076	310,682	2,023,702	2,712,711	465,981
Kansas	4,941,749	86,078	1,156,640	1,934,145	1,763,986
Kentucky	4,011,496	177,961	1,755,506	1,736,894	341,135
Louisiana	7,592,644	3,177,414	919,108	3,280,202	215,920
Maine	1,069,551	10,000	529,881	529,670	.....
Maryland	17,729,577	15,350,563	916,529	1,462,485	.....
Massachusetts	5,255,724	1,153,269	78,495	3,306,431	717,529
Michigan	37,606,750	6,220,693	18,046,355	11,368,332	1,971,370
Minnesota	9,564,071	1,057,635	2,225,831	5,574,885	705,720
Mississippi	10,352,659	412,549	722,833	8,990,725	226,552
Missouri	6,949,310	1,208,052	592,128	3,594,862	1,464,268
Montana	1,566,035	388,076	722,676	278,181	177,102
Nebraska	1,278,146	108,435	51,760	1,000,431	117,520
Nevada	635,402	121,359	.....	165,341	348,702
New Hampshire	416,312	68,215	.....	315,063	33,034
New Jersey	9,570,280	1,582,589	2,275,987	3,255,548	3,456,156
New Mexico	2,397,262	429,100	474,444	816,441	677,277
New York	39,236,050	16,116,995	3,465,415	14,465,106	5,188,534
North Carolina	7,717,640	3,591,129	1,287,132	1,959,820	879,559
North Dakota	3,921,648	260,496	356,894	2,013,398	1,290,860
Ohio	20,787,711	7,653,911	3,318,727	7,303,096	2,511,077
Oklahoma	52,864,741	265,749	801,830	1,944,695	49,852,467
Oregon	4,528,324	863,003	292,785	3,173,233	199,303
Pennsylvania	16,960,831	3,346,676	1,742,459	8,593,299	3,298,397
Rhode Island	4,734,416	262,255	1,836,037	2,363,345	272,779
South Carolina	4,095,573	65,828	676,602	1,313,395	2,039,748
South Dakota	2,890,627	227,131	1,574,034	935,372	154,090
Tennessee	5,494,315	252,126	871,790	1,230,033	3,140,366
Texas	47,415,679	13,529,925	2,023,874	19,898,111	11,963,769
Utah	3,136,221	1,465,933	.....	1,053,412	616,876
Vermont	24,150	14,150	.....	10,000	.....
Virginia	6,280,926	2,385,746	368,400	2,331,153	1,195,627
Washington	11,281,313	3,578,760	212,052	6,788,334	702,167
West Virginia	7,520,706	136,595	85,358	6,336,979	961,774
Wisconsin	16,440,544	1,988,637	8,580,360	4,718,055	1,153,292
Wyoming	24,440	.....	.....	24,440	.....
Total	$615,669,926	$173,840,195	$100,860,069	$194,332,049	$146,637,613

[1] This includes separate contracts for pumping facilities and other water works contracts that cover more than one of the above divisions.

D. COMBINATION CONSTRUCTION

Combination contracts are made up of projects that cover more than one of the three major categories: (1) Sewage treatment; (2) collecting sewers; and (3) water works. The combination contract awards by States appear in table 3 of section 1.

TABLE 16.—*Contract Awards—Combination Construction—1960—By Population Size Group*

Population size group	Combinations [1]			
	Number	Dollars	Cumulative [2]	
			Number	Dollars
			Percent	*Percent*
Unknown population size	42	7,267,551	.....	.....
Under 500	30	3,607,109	3.3	4.5
500–1,000	36	2,448,143	7.3	7.5
1,000–2,500	96	11,205,130	18.0	21.5
2,500–5,000	68	8,355,896	25.6	31.9
5,000–10,000	85	14,346,617	35.0	49.7
10,000–25,000	85	8,642,091	44.4	60.5
25,000–50,000	66	6,436,669	51.8	68.5
50,000–100,000	32	4,107,217	55.3	73.6
100,000–250,000	189	8,402,234	76.3	84.0
250,000 and over	213	12,853,149	100.0	100.0
Total	942	87,671,806	.....	.....

[1] This includes contracts whose descriptive information covers more than a single category of construction (e.g., sewage treatment, sewers, or water works).

[2] This is based on the *known* population groups.

TABLE 17.—*Contract Awards—Combination Construction—1960—By Contract Size Group*

Contract size group (Dollars)	Combinations [1]			
	Number	Dollars	Cumulative	
			Number	Dollars
			Percent	*Percent*
Under 10,000	161	871,607	17.1	1.0
10,000–25 000	239	3,880,609	42.5	5.4
25,000–50,000	182	6,462,144	61.8	12.8
50,000–100,000	100	11,364,503	78.8	25.8
100,000–250,000	127	19,404,876	92.3	47.9
250,000–500,000	43	14,995,763	96.8	65.0
500,000–1,000,000	19	13,079,781	98.8	79.9
1,000,000–5,000,000	11	17,612,523	100.0	100.0
5,000,000 and over	.....	None	.....	.....
Total	942	87,671,806	.....	.....

[1] This includes contracts whose descriptive information covers more than a single category of construction (e.g., sewage treatment, sewers, or water works).

TABLE 18.—*Contract Awards—Combination Construction—1960—By Drainage Basins*

Drainage basin	Combinations [1]		Drainage basin	Combinations [1]	
	Number	Dollars		Number	Dollars
Northeast	40	3,531,228	Southwest-Lower Mississippi	50	6,382,120
North Atlantic	374	21,047,589	Colorado River	1	150,000
Southeast	81	9,338,622	Western Gulf	57	6,138,841
Tennessee River	5	563,908	Pacific Northwest	10	1,269,952
Ohio River	38	4,736,603	California	29	5,846,598
Lake Erie	28	2,987,219	Great Basin	5	882,694
Upper Mississippi	114	16,535,527	Alaska	.....	.....
Western Great Lakes	80	6,180,986	Hawaii	1	258,161
Missouri River	29	1,812,758	Total	942	87,671,806

[1] This includes contracts whose descriptie information coers more than one single category of construction (e.g., sewage treatment, sewers, or water works).

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Other related publications

Sewage Treatment Works Contract Awards, 1952-1957
Public Health Service Publication No. 633

Sewage and Water Works Construction, 1957
Public Health Service Publication No. 608

Sewage and Water Works Construction, 1958
Public Health Service Publication No. 673

Sewage and Water Works Construction, 1959
Public Health Service Publication No. 758

Public Health Service Publication No. 758
1960 Edition